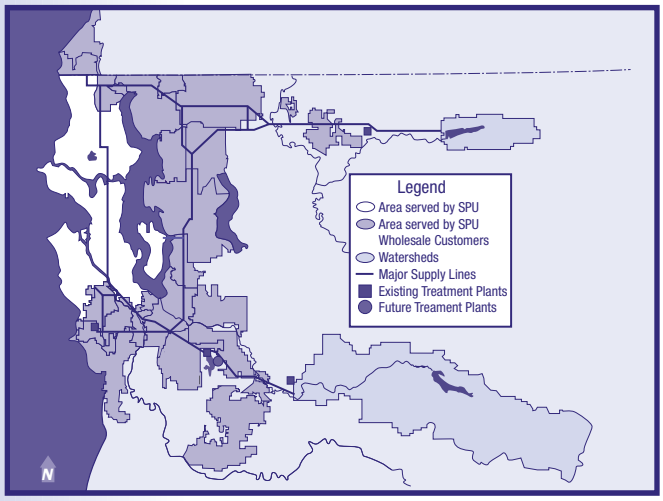
Seattle Public Utilities

Drinking Water Quality Annual Report

May 2002

This report concerns the quality of the drinking water Seattle Public Utilities provides to 1.3 million people in the Seattle area.

Where our drinking water originates



The Cedar River and the South Fork Tolt River supply almost all of Seattle's water. These rivers begin in the Cascade Mountains and have very large watersheds (the areas which drain to the two rivers). Seattle Public Utilities (SPU) owns the Cedar River Watershed, and 70 percent of the South Fork Tolt River Watershed above the intake points. The United States Forest Service owns the remainder of the Tolt Watershed. When necessary to meet summer demands, SPU can supplement these supplies with water from the Highline Wellfield, located near Sea-Tac Airport. The wells were not used in 2001.

Water supply security

SPU has long been committed to a strong security program to protect water quality and service reliability. While there have been no direct threats to Seattle's water supply system, SPU increased security even further following the September 11, 2001 terrorist attacks and continues to evaluate and adjust security measures. For more information about water supply safety, visit www.cityofseattle.net/util/watersupply or call 206-684-5800.

How we protect the source

Protection of the two watersheds is very important to providing good water quality. Since both watersheds are publicly owned, we enforce an aggressive watershed protection program. This program prohibits agricultural, industrial and recreational activities in the watersheds, and no one is allowed to live there.

Tolt Watershed

The Washington State Department of Health (DOH) has surveyed our watersheds and determined that Seattle's sources have a low vulnerability to contamination. This means there is little opportunity for contaminants to enter the water.

Even so, there is always some potential for natural sources of contamination. In Seattle's surface water supplies, the potential sources of contamination include:

- microbial contaminants, such as viruses, bacteria, and protozoa from wildlife;
- inorganic contaminants, such as salts and metals, which are naturally occurring, and;
- organic contaminants, which result from chlorine combining with the naturally occurring organic matter.

As part of a new federal requirement, DOH will conduct source water assessments for all water supplies in Washington by 2003. These assessments will be used to determine the potential sources of contamination for each supply. Once Seattle's assessments are completed, we will include this information in our annual report. We anticipate an excellent assessment since we have such a high degree of control over our watersheds.

What's in our drinking water

The results of monitoring in 2001 are shown in the table below. These results are for parameters regulated by the federal and state agencies. For other water quality information, please check our web site (listed on back) or call 206-615-0827. We can also send you a list of the 120 compounds we checked for but did not find in our surface water supplies, or water quality information on the Highline Wells.

Water quality monitoring data can be difficult to interpret. To make all the information fit in one table, we used many acronyms that are defined below the table. The first two columns list the compounds we detected and the units of measurement. The light blue columns identify the regulatory limits we must stay below. The gray columns show the levels found in the Cedar and Tolt supplies. The last column identifies where these compounds may come from or how they are formed.

In Seattle, if you live south of Green Lake, your water probably comes from the Cedar. Areas north of Green Lake usually receive Tolt water. Each source can provide water to any area in Seattle if needed.

		EPA's Allowable Limits		Levels in Cedar Water		Levels in Tolt Water +		
Detected Compounds	Units	MCLG	MCL	Average	Range	Average	Range	Typical Sources
Turbidity	NTU	NA	TT	0.8	0.3 to 3.9	0.07	0.04 to 0.3	Soil runoff
Fluoride	ppm	4	4	1.0	0.9 to 1.1	1.0	0 to 1.5	Water additive, which promotes strong teeth
Nitrate	ppm	10	10	0.04	NA	0.18	NA	Erosion from natural deposits
Total Coliform	% positive samples	0	5%	Highest month = 0.9% Annual Average = 0.2%				Naturally present in the environment
Total Trihalomethanes	ppb	NA	80	38	18 to 55	50**	15 to 37	
Haloacetic Acids(5)	ppb	NA	60	29	17 to 53	26	15 to 31	
Haloacetonitriles*	ppb	No EPA limit set		1	ND to 2	2	ND to 3	By-products of drinking water chlorination
Haloketones*	ppb	No EPA limit set		1	ND to 3	5	2 to 6	
Total Organic Halides*	ppb as Cl	No EPA limit set		96	65 to 142	264	165 to 321	
Chloral Hydrate*	ppb	No EPA limit set		8	2 to 24	14	4 to 31	
Chloropicrin*	ppb	No EPA limit set		0.2	ND to 0.6	0.2	ND to 0.7	

* Monitoring results from July 1997 to December 1998.
** The trihalomethane average is calculated using results from 2000 and 2001. The range includes results from 2001 only.
\+ New Tolt Treatment Facility came on-line in early 2001.

Definitions

MCLG: *Maximum Contaminant Level Goal*
The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MCL: *Maximum Contaminant Level*
The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

TT: *Treatment Technique*
A required process intended to reduce the level of a contaminant in drinking water.

NTU: *Nephelometric turbidity unit*
Turbidity is a measure of how clear the water looks. The turbidity MCL that applied to the Cedar supply in 2001 is 5 NTU, and for the Tolt it was 0.5 NTU. 100% of the samples from the Tolt in 2001 were below 0.5 NTU.

NA: *Not Applicable*

ND: *Not Detected*

ppm: *1 part per million* = 1 mg/L

ppb: *1 part per billion* = 1 µg/L

1 ppm: *1000 ppb*

No compounds were detected above the allowable levels.

How the water is treated

Currently, there are four steps in the treatment of the Cedar supply: screening, fluoridation, corrosion control, and disinfection with chlorine. Treatment for the Tolt supply includes ozonation, coagulation and flocculation, filtration, chlorination, fluoridation, and corrosion control.

Typical chlorine levels in the distribution system range from 0.5 to 1.5 parts per million. Fluoride is added at one part per million. Corrosion control treatment increases the pH to approximately 8.2 at the plant, but the pH can vary in the distribution system between 7.3 and 8.6.

By mid 2004, a new treatment facility for the Cedar supply will be in operation. This new facility will include two new treatment processes, ozone and ultraviolet light (UV) disinfection, along with the existing treatment processes, corrosion control and chlorination. Fluoridation will continue at its current location, Landsburg Treatment Plant.

The Cedar Treatment Facility is being developed in part to comply with an Agreed Order between Seattle and DOH. The Agreed Order was executed after one of the eleven criteria to remain unfiltered was exceeded in 1992. (It was exceeded again in 2001.) There was no public health risk associated with this exceedance, as treatment and monitoring occurred as required. The new treatment facility will improve public health protection by disinfecting against *Cryptosporidium* and it will improve the taste and odor problems that can occur with this supply.

Lead and copper in drinking water

The pipes in your home or business can have an impact on the quality of water coming from the tap. Of particular concern is copper pipe with lead solder. In Seattle, these are primarily homes plumbed with copper pipe prior to 1980 or homes that do not meet the plumbing code. If you have such a home, you should consider flushing the water from the pipes before using it for drinking or cooking. This is especially important if the water was not used for six hours or more. Each year, SPU includes information about lead in drinking water with the bill. If you would like a copy, please call 206-684-7834.

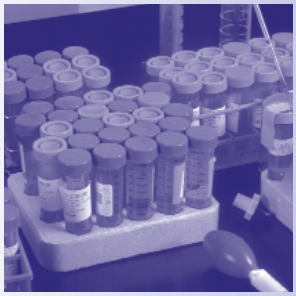
There are health impacts from lead in the water. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink water with high lead levels over many years could develop kidney problems or high blood pressure.

Below are the 1997 results of regional sampling at 390 copper plumbed homes. Although copper was not a problem, fourteen percent of the homes had lead levels above the action level. The action level is the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. Seattle's planned treatment and reservoir covering improvements should help further reduce the corrosiveness of the water to your plumbing. We expect to meet the action level in the future once these improvements are in place. We will be monitoring at customers homes again in 2003 or 2004.

Lead and Copper Regional Monitoring Program Results

Parameter and Units	MCLG	Action Level	Results of 1997 Sampling*	Homes Exceeding Action Level	Source
Lead, ppb	0	15	19.3	53 of 390	Corrosion of household
Copper, ppm	1.3	1.3	0.6	0 of 390	plumbing systems

* 90th Percentile: i.e. 90 percent of the samples were less than the values shown.



Information from the EPA

To ensure that tap water is safe to drink, the EPA adopts regulations setting the water quality standards for public water systems. The federal Food and Drug Administration regulates contaminants in bottled water and is responsible for providing the same level of public health protection.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline (1-800-426-4791).

How you can be involved in decisions

Seattle Public Utilities and the City of Seattle seek consumer opinions in many ways. You can participate through public hearings associated with environmental permitting and review of new facilities. There are regular utility briefings at City Council meetings. And there are other formal or informal communications with utility management and elected officials. Please check the daily or community newspapers, or our web site, for listings.

Cryptosporidium

Cryptosporidium is a disease-causing organism that is commonly found in the natural environment. Monitoring in 2001 detected *Cryptosporidium* in seven of the 22 samples collected from the Cedar supply, with a maximum concentration of 12 organisms per 100 liters. *Cryptosporidium* was not detected in the five samples collected from the Tolt supply. The number of organisms found are relatively low compared to typical rivers and streams throughout the country. The method used to detect *Cryptosporidium* is not very reliable and cannot determine if the organisms are dead or alive. Our current treatment for the Cedar supply is ineffective against *Cryptosporidium*; however, there have been no disease outbreaks associated with Seattle's drinking water. The Cedar's future treatment and the new Tolt treatment processes are very effective against *Cryptosporidium*.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. Environmental Protection Agency/Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

If you would like more information about *Cryptosporidium*, a fact sheet is available from our web site at www.cityofseattle.net/util/services/waterquality/crypto.htm or by calling the water quality information line at 206-615-0827.

How you can get more information

Seattle Public Utilities

Customer Service Center 206-684-3000
(To ask billing questions, or to report leaks or dirty water, etc.)
Water quality Web site: .....www.cityofseattle.net/util/services/WaterQuality
Water quality e-mail: .....water.quality@ci.seattle.wa.us
Water quality phone: 206-615-0827

Washington State Department of Health

Web Site: .....www.doh.wa.gov/ehp/dw/

US Environmental Protection Agency

Web site: .....www.epa.gov/safewater/
Safe Drinking Water Act Hotline: 1-800-426-4791
Safe Drinking Water Act e-mail: .....hotline-sdwa@epamail.epa.gov

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